L Number	Hits	Search Text	DB	Time stamp
1	515	sensor adj fusion	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:03
2	3	(sensor adj fusion) and (motion adj capture)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:06
4	1	(((sensor adj fusion) and (motion adj capture)) and (optical and magnetic)) and (id or identify or identification)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:04
3	3	((sensor adj fusion) and (motion adj capture)) and (optical and magnetic)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:07
5	3	(sensor adj fusion) and (((sensor adj fusion) and (motion adj capture)) and (optical and magnetic))	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:06
7	2055	(motion same ((optical adj capture) or (optical adj sensor)))	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:08
8	796	(motion same ((magentic adj capture) or (magnetic adj sensor)))	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:09
9	144	((motion same ((optical adj capture) or (optical adj sensor)))) and ((motion same ((magentic adj capture) or (magnetic adj sensor))))	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:46
10	134	(((motion same ((optical adj capture) or (optical adj sensor)))) and ((motion same ((magentic adj capture) or (magnetic adj sensor))))) and (fuse or fusion or integrat$5 or combin$5)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:10
11	20	((((motion same ((optical adj capture) or (optical adj sensor)))) and ((motion same ((magentic adj capture) or (magnetic adj sensor))))) and (fuse or fusion or integrat$5 or combin$5)) and (system same (id or identify or identification))	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:10
12	8	((((motion same ((optical adj capture) or (optical adj sensor)))) and ((motion same ((magentic adj capture) or (magnetic adj sensor))))) and (fuse or fusion or integrat$5 or combin$5)) and (system with (id or identify or identification))	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:10
13	9	omcs and mmcs	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:48
14	24	(optical adj motion adj capture)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:49
15	6	(magnetic adj motion adj capture)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 19:49
16	4	((optical adj motion adj capture)) and ((magnetic adj motion adj capture))	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:43
17	1	5986660.pn.	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:28

18	247	703/24.ccls.	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:43
19	2178	345/156.ccls.	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:43
20	1795	345/419.ccls.	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:51
21	705	(345/156.ccls. or 345/419.ccls.) and (optical and magnetic)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:52
22	425	((345/156.ccls. or 345/419.ccls.) and (optical and magnetic)) and motion	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:52
23	112	(((345/156.ccls. or 345/419.ccls.) and (optical and magnetic)) and motion) and (capture)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:53
24	1	((((345/156.ccls. or 345/419.ccls.) and (optical and magnetic)) and motion) and (capture)) and (optical adj motion adj capture)	USPAT; US-PGPUB; EPO; JPO; IBM_TDB	2004/09/27 20:54

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```

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John Colter, Netscape Navigator
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1 Motion capture for the rest of us

Margaret S. Geroch

January 2004 **Journal of Computing Sciences in Colleges**, Volume 19 Issue 3

Full text available: pdf(56.71 KB) Additional Information: full citation, abstract, references, index terms

We are all aware of the increasingly realistic computer-generated human motion that abounds in movies, advertisements and especially games at present. This natural-looking appearance in many cases is attributed, as it has been for years, to the fine skills of professional animators in the Disney tradition. But more and more these realistic motions also involve the use of motion capture. We present the case that motion capture concepts and techniques are not the exclusive domain of big movie stud ...

2 Animation from observation: Motion capture and motion editing

Michael Gleicher

November 1999 **ACM SIGGRAPH Computer Graphics**, Volume 33 Issue 4

Full text available: pdf(802.29 KB) Additional Information: full citation, index terms

3 Motion capture, editing & planning: Mapping optical motion capture data to skeletal motion using a physical model

Victor B. Zordan, Nicholas C. Van Der Horst

July 2003 **Proceedings of the 2003 ACM SIGGRAPH/Eurographics Symposium on Computer Animation**

Full text available: pdf(5.39 MB) Additional Information: full citation, abstract, references, index terms

Motion capture has become a premiere technique for animation of humanlike characters. To facilitate its use, researchers have focused on the manipulation of data for retargeting, editing, combining, and reusing motion capture libraries. In many of these efforts joint angle plus root trajectories are used as input, although this format requires an inherent mapping from the raw data recorded by many popular motion capture set-ups. In this paper, we propose a novel solution to this mapping problem ...

4 VR based entartainment & education: Tele-sports and tele-dance: full-body network interaction

Benjamin Schaeffer, Mark Flider, Hank Kaczmarski, Luc Vanier, Lance Chong, Yu Hasegawa-Johnson

October 2003 **Proceedings of the ACM symposium on Virtual reality software and technology**

Full text available: pdf(2.24 MB) Additional Information: full citation, abstract, references, index terms

Researchers have had great success using motion capture tools for controlling avatars in virtual worlds. Another current of virtual reality research has focused on building collaborative environments connected by networks. The present paper combines these tendencies to describe an open source software system that uses motion capture tools as input devices for realtime collaborative virtual environments. Important applications of our system lie in the realm of simulating interactive, multipartici ...

Keywords: PC Cluster, immersive virtual environment, motion capture, networking

5 A hierarchical approach to interactive motion editing for human-like figures

Jehee Lee, Sung Yong Shin

July 1999 **Proceedings of the 26th annual conference on Computer graphics and interactive techniques**

Full text available: pdf(2.69 MB) Additional Information: full citation, references, citings, index terms

Keywords: hierarchical techniques, inverse kinematics, motion adaptation, motion editing, spacetime constraints

6 Shape & motion: Pitching a baseball: tracking high-speed motion with multi-exposure images

Christian Theobalt, Irene Albrecht, Jörg Haber, Marcus Magnor, Hans-Peter Seidel

August 2004 **ACM Transactions on Graphics (TOG)**, Volume 23 Issue 3

Full text available: pdf(382.90 KB) Additional Information: full citation, abstract, references, index terms

Athletes and coaches in most professional sports make use of high-tech equipment to analyze and, subsequently, improve the athlete's performance. High-speed video cameras are employed, for instance, to record the swing of a golf club or a tennis racket, the movement of the feet while running, and the body motion in apparatus gymnastics. High-tech and high-speed equipment, however, usually implies high-cost as well. In this paper, we present a passive optical approach to capture high-speed motion ...

Keywords: high-speed motion capture, multi-exposure images, physically based validation, pitching and flight of baseball

7 Skinning: Model-based reconstruction for creature animation

Maryann Simmons, Jane Wilhelms, Allen Van Gelder

July 2002 **Proceedings of the 2002 ACM SIGGRAPH/Eurographics symposium on Computer animation**

Full text available: pdf(2.12 MB) Additional Information: full citation, abstract, references, citings

An semi-automatic technique for creating 3D models of creatures suitable for animation is presented. An anatomically based canonical model is deformed, given a sparse set of feature points derived from measurements describing the target animal. The layered canonical model is built on top of an articulated structure hierarchy and contains a representation of the animal's skeleton, muscles, and skin. The joint hierarchy and associated body components are transformed based on the input data. A dens ...

Keywords: 3D morphing, animation, model reconstruction, shape interpolation

8 Production and playback of human figure motion for visual simulation
John P. Granieri, Jonathan Crabtree, Norman I. Badler
July 1995 **ACM Transactions on Modeling and Computer Simulation (TOMACS)**, Volume 5 Issue 3

Full text available: pdf(1.68 MB) Additional Information: full citation, abstract, references, citings, index terms

We describe a system for off-line production and real-time playback of motion for articulated human figures in 3D virtual environments. The key notion are (1) the logical storage of full-body motion in posture graphs, which provides a simple motion access method for playback, and (2) mapping the motions of high DOF figures to lower DOF figures using slaving to provide human models at several levels of detail, both in geometry and articulation, for later playback. We present our system in th ...

Keywords: animation, multiresolution motion, posture graphs, real-time animation, visual simulation

9 Modeling and visualization: Application of inverse kinematics for skeleton manipulation in real-time
Martin Fêdor
April 2003 **Proceedings of the 19th spring conference on Computer graphics**

Full text available: pdf(631.08 KB) Additional Information: full citation, abstract, references

Usual way of character's animation is the use of motion captured data. Acquired bones' orientations are blended together according to user input in real-time. Although this massively used method gives a nice results, practical experience show how important is to have a system for interactive direct manipulation of character's skeleton in order to satisfy various tasks in Cartesian space. For this purpose, various methods for solving inverse kinematics problem are used. This paper presents three ...

Keywords: CCD method, Jacobian matrix, Newton-Raphson method, bone, inverse kinematics, joint, kinematic tree, skeleton

10 Tracking/detection section: A convex penalty method for optical human motion tracking
C. Barrón, I. A. Kakadiaris
November 2003 **First ACM SIGMM international workshop on Video surveillance**

Full text available: pdf(1.67 MB) Additional Information: full citation, abstract, references, index terms

Human motion tracking from monocular image sequences has been explored widely. However, there is a lack of a framework addressing the variety of sensing conditions. In this paper, we present a simple, efficient, and robust method for recovering plausible 3D motion from a video without knowledge of the camera's parameters. Our method transforms the motion capture problem into a convex problem and employs a hierarchical geometrical solver for the minimization. This algorithm was applied to synthet ...

Keywords: human motion capture, monocular human motion tracking

11 Devices: Super wide viewer using catadioptrical optics
Hajime Nagahara, Yasushi Yagi, Masahiko Yachida
October 2003 **Proceedings of the ACM symposium on Virtual reality software and technology**

Full text available: pdf(486.63 KB) Additional Information: full citation, abstract, references, index terms

Many applications have used a Head-Mounted Display (HMD), such as in virtual and mixed realities, and tele-presence. The advantage of HMD systems is the ease of feeling a 3D world in the display of animation or movies. However, the field of view (FOV) of commercial HMD systems is too narrow for feeling immersion. The horizontal FOV of many commercial HMDs is around 60 degrees, significantly narrower than that of humans. In this paper, we propose a super wide field of view head-mounted display co ...

Keywords: Head Mount Display, catadioptrical optics, tele-presence, wide field of view

12 Data preparation and entry for computer-aided mapping

Bernard Schechter

June 1978 **Proceedings of the 15th conference on Design automation**

Full text available: pdf(1.24 MB) Additional Information: full citation, abstract, references, citings, index terms

The rapid growth in use of interactive graphic systems for geo-coded data bases has expanded interest about the computer-aided mapping processes by many groups involved in automation. Surveying and mapping were early users of computer technology and the current systems and practices are evolving through changes to modern classical analog mapping. The various phases of the process, from aerial photography acquisition through computer-driven hard copy output plots are reviewed as a basis for ...

13 Optical disks (panel session): effecting successful integration

D'Ellen Bardes, Patrick Call, Michael S. Theis, Taroon C. Kamdar

October 1985 **Proceedings of the 1985 ACM annual conference on The range of computing : mid-80's perspective: mid-80's perspective**

Full text available: pdf(395.46 KB) Additional Information: full citation, references, index terms

14 Animation control for real-time virtual humans

Norman I. Badler, Martha S. Palmer, Rama Bindiganavale

August 1999 **Communications of the ACM**, Volume 42 Issue 8

Full text available: pdf(328.21 KB) html(36.38 KB) Additional Information: full citation, references, citings, index terms

15 Interactive control of avatars animated with human motion data

Jehee Lee, Jinxiang Chai, Paul S. A. Reitsma, Jessica K. Hodgins, Nancy S. Pollard

July 2002 **ACM Transactions on Graphics (TOG) , Proceedings of the 29th annual conference on Computer graphics and interactive techniques**, Volume 21 Issue 3

Full text available: pdf(8.00 MB) Additional Information: full citation, abstract, references, citings, index terms

Real-time control of three-dimensional avatars is an important problem in the context of computer games and virtual environments. Avatar animation and control is difficult, however, because a large repertoire of avatar behaviors must be made available, and the user must be able to select from this set of behaviors, possibly with a low-dimensional input device. One appealing approach to obtaining a rich set of avatar behaviors is to collect an extended, unlabeled sequence of motion data appropria ...

Keywords: avatars, human motion, interactive control, motion capture, virtual environments

16 Digital multimedia offers key to educational reform
Don Hardaway, Richard P. Will
April 1997 **Communications of the ACM**, Volume 40 Issue 4
Full text available: pdf(239.29 KB) Additional Information: full citation, references, citings, index terms, review

17 Technologies for augmented reality systems: realizing ultrasound-guided needle biopsies
Andrei State, Mark A. Livingston, William F. Garrett, Gentaro Hirota, Mary C. Whitton, Etta D. Pisano, Henry Fuchs
August 1996 **Proceedings of the 23rd annual conference on Computer graphics and interactive techniques**
Full text available: pdf(972.89 KB) Additional Information: full citation, references, citings, index terms

Keywords: 3D medical imaging, BSP tree, augmented reality, calibration, registration, stereo video see-through head-mounted display, ultrasound echography

18 Superior augmented reality registration by integrating landmark tracking and magnetic tracking
Andrei State, Gentaro Hirota, David T. Chen, William F. Garrett, Mark A. Livingston
August 1996 **Proceedings of the 23rd annual conference on Computer graphics and interactive techniques**
Full text available: pdf(1.43 MB) Additional Information: full citation, references, citings, index terms

Keywords: augmented reality, calibration, frame buffer techniques, registration, stereo video see-though head-mounted display

19 Head movement estimation for wearable eye tracker
Constantin A. Rothkopf, Jeff B. Pelz
March 2004 **Proceedings of the Eye tracking research & applications symposium on Eye tracking research & applications**
Full text available: pdf(619.25 KB) Additional Information: full citation, abstract, references, index terms

In the study of eye movements in natural tasks, where subjects are able to freely move in their environment, it is desirable to capture a video of the surroundings of the subject not limited to a small field of view as obtained by the scene camera of an eye tracker. Moreover, recovering the head movements could give additional information about the type of eye movement that was carried out, the overall gaze change in world coordinates, and insight into high-order perceptual strategies. Algorithm ...

Keywords: eye movement classification, head movement, natural task

20 The computation of optical flow
S. S. Beauchemin, J. L. Barron
September 1995 **ACM Computing Surveys (CSUR)**, Volume 27 Issue 3

Full text available: pdf(3.06 MB) Additional Information: full citation, abstract, references, citings, index terms

Two-dimensional image motion is the projection of the three-dimensional motion of objects, relative to a visual sensor, onto its image plane. Sequences of time-orderedimages allow the estimation of projected two-dimensional image motion as either instantaneous image velocities or discrete image displacements. These are usually called the optical flow field or the image velocity field. Provided that optical flow is a reliable approximation to two-dimensional ...

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1 **Sensor fusion for motion capture system based on system identifica**
ChanJong Park; Hyeong-Kyo Kim; Il-Kwon Jeong; Kwang Yun Wohn;
Computer Animation 2000. Proceedings , 3-5 May 2000
Pages:71 - 76

[Abstract] [PDF Full-Text (400 KB)] **IEEE CNF**

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2 **On the trail of the shadow woman: the mystery of motion capture**
Delaney, B.;
Computer Graphics and Applications, IEEE , Volume: 18 , Issue: 5 , Sept.-Oct 1998
Pages:14 - 19

[Abstract] [PDF Full-Text (836 KB)] **IEEE JNL**

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3 **A new tracking system of jaw movement using two magnets**
Yabukami, S.; Kanetaka, H.; Tsuji, N.; Itagaki, A.; Yamaguchi, M.; Arai, K.I.; Mitani, H.;
Magnetics Conference, 2002. INTERMAG Europe 2002. Digest of Technical Pa 2002 IEEE International , 28 April-2 May 2002
Pages:FV8

[Abstract] [PDF Full-Text (238 KB)] **IEEE CNF**

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4 **Motion pictures on in-situ air bearing dynamics**
Millman, S.; Hoyt, R.; Horne, D.; Beye, B.;
Magnetics, IEEE Transactions on , Volume: 22 , Issue: 5 , Sep 1986
Pages:1031 - 1033

[Abstract] [PDF Full-Text (384 KB)] **IEEE JNL**

5 **Granular magnetic cobalt metal/polymer thin film system**
Jongill Hong; Kay, E.; Wang, S.X.;
Magnetics, IEEE Transactions on , Volume: 32 , Issue: 5 , Sept. 1996
Pages:4475 - 4477

[Abstract] [PDF Full-Text (716 KB)] **IEEE JNL**

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